

You Can Shape How We Look at Megacities!



Project Title	You Can Shape How We Look at Megacities!
Project Summary	Apply theoretical models to represent and simulate megacities!
Country	United States
Country/Region of Focus	Global

Project Description

Communications, information, goods, services, money, and people flow in and out of megacities every day. This project builds understanding of megacities through quantifying the various inputs and outputs of urban environments. As part of this project, you will critically analyze open-source data and academic work to help map, model, refine, simulate, and understand how megacities function to support the Department of Defense. To do this, we are building a suite of dynamic, computational models, to describe and represent the megacity as a complex and adaptive system of systems. These models will quantify relationships between city inputs and outputs and the pathways between them. The information from this analysis is used to help identify critical nodes, their interdependencies, and identify likely impact(s) and severity of changes or disruptions derived from events like natural disasters, civil conflict, or terrorism.

Starting with an understanding of academic work, as part of this team, you will;

- (1) refine and apply conceptual representations of megacity functions through a series of case-studies of different countries and regions, and
- (2) construct a quantifiable model to well represent a sub-set of megacity functions in some suitable programming environment. You do not need to be a programming expert to participate!

This project requires the researcher to conduct a literature review of various models and functions of megacities, refine and apply existing approaches through a series of case-studies, and build a working quantitative model to represent these functions.

Required Skills or Interests

Skill(s)

Analytical writing

Coding

Data analysis

Data visualization

Design thinking

GIS expertise

Research

Additional Information

Our modeling efforts will focus on the following megacity functions: economics and commerce, human services, governance and the judicial system, energy, communications and information, transportation and distribution, social ecology, and urban morphology. We are looking for a variety of talents to enable this team!

You will work on a team of up to two other interns. This project will include a literature review, case-study application, regular check-ins with mentors and advisors, and will culminate in a final written report to include model selection, refinement, implementation, and demonstration. As part of this internship, we encourage presenting and/or publishing your work. This project is a continuation of a DoD project where prior eInterns published papers, spoke with senior DoD advisors, and presented their work at academic conferences.

Language Requirements

None